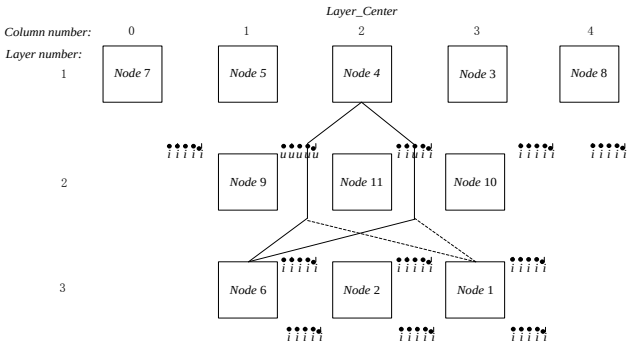

Fig. 6 The wiring diagram of across layer in different column of case 3

The channel routing algorithm realizes the orderly distribution lines, and implements the layout of the uniform and local symmetry.

V. Experimental Results

Take Fig.7 as example, we suppose that the program size is less than 120, and conduct the cabling operation on node i and node j by using the traditional layout algorithm and the proposed algorithm respectively. The layout diagram is shown as Fig. 7-a and Fig. 7-b. Here, node i has 13 call relationships. 3 is the adjacent layer calls, and the remaining 10 is the cross layer calls. For node j, it has 4 call relationships. 1 is the neighbor layer call, and the remaining 3 is the cross layer calls.

For Fig.7-a, the cross layer connection is realized by increasing the virtual node to connect. When across a layer, a virtual node is added, thus the node ordering time is increased, which leads to the inefficiency in wiring. And, the algorithm does not take into account the size of the program and the size of the display area. Besides, it also does not allocate and adjust the routing effectively. So, when the call relationship of node i is complex, the wring loses balance.

For Fig.7-b, the channel point number for each node is dynamically assigned to 5 according to the program size. It is not necessary to consider the channel node number when ordering the nodes. Use the different wiring routing strategy according to the call node relationship, to make the layout even symmetrical. Below the channel line, we use i (idle) and u (occupied) to mark the routing, and adopt the numeral to stand the requested order of the routing, and then reach the orderly wiring. The routing algorithm has good applicability.

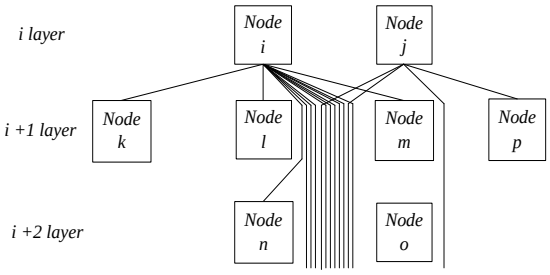

Fig. 7-a

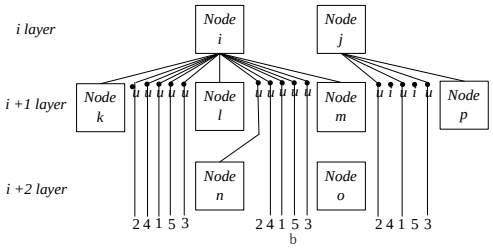

Fig. 7-b

Fig. 7 The contrast diagram of the two algorithms

VI . Conclusions

The hierarchical layout algorithm proposed in this paper implements the visualization of software module call diagram (function call relations and class inheritance relations). Since the node call relationship is different, this paper adopts the corresponding wiring strategy to allocate and apply the connection lines, achieve the wiring orderly. The layout algorithm features uniform wiring, symmetry, etc., which enhances the readability of the visualization diagram.

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